of acid and alkali may be likewise shown by it, which is best done by the following means.

To a pint of water add two or three drops of sulphuric acid, and infuse in it as many leaves of minced red cabbage as it will cover. In a day or two the water will be tinged of a fine red colour, decant the liquor and preserve it in a bottle closely stopped, when the experiment is to be performed, a portion of the red tincture is to be neutralized, by carefully adding a few drops of ammonia, till it assumes a blue colour. Two watch glasses, connected by a moistened fibre of cotton, or bibulous paper, are to be filled with this fluid, and placed in the Voltaic circuit by connecting one of them with the negative, and the other with the positive wire of the battery. In a short time the alkali attracted by the negative wire, will convert the fluid it touches to a green colour, while positive wire will convert that in the other glass to a fine red, by attracting the acid. In about an hour the transfer will be complete, the fluid in the positive cup being of a bright red, and that in the negative cup of a beautiful green. If the situation of the wires is reversed the red coloured liquor will become green, and the green red, after each becoming blue first. This alternate transfer of colour, which may be several times repeated with one charge, has been frequently produced by a single trough of only 30 pairs of two inch plates

Observations....This paper of Mr. Singers contains the latest discoveries relative to the management of the Voltaic apparatus, and is particularly remarkable for pointing out the singular property muriatic acid possesses, of continuing the action of the trough; and in showing very simple and cheap means by which all the new Electro-chemical experiments may be performed.

*On the influence which the shape of a still has on the quality of the product of Distillation by M. Curaudau. Sonnini's Journal, Tom.*1 *p.*106.

M. Curaudau states that he was so entirely convinced of the advantage of the broad shallow stills, proposed by M. Chaptal that he recommended them in his writings without hesitation. Further experience, however, has proved to him that they have inconveniences which render them less fit for the distillation of wine, than the stills in common use.

In deep stills the liquor at a certain time receives more heat than it gives off by evaporation; the temperature then may rise, till it reaches the term at which the ebullition is complete, an essential condition for effecting the combination of the alcohol with the aroma of the wine. Distillation is doubtlessly performed quicker in shallow stills, but the brandy obtained in this method, contains nothing or next to nothing of that aroma which is so grateful to the smell, and communicates the agreeable flavour, that distinguishes well made brandy.

To prove these facts M. Curaudau subjected to distillation a quantity of wine, part in a shallow still, and part in a still of the common construction; when the distillation was concluded, the products were examined by several different persons, all of whom decidedly gave the preference to the brandy produced by the common deep still: this is accounted for from the evaporation being very abundant in the shallow still, at an heat of from 45° to 55° Reaumur (133° to 156° F.) while in the deep still it does not begin to be copious till the heat is from 70° to 75° (190° or 200° F.)

Experience proves that ebullition is necessary to extract the alcohol from the wine. This boiling favours the combination of the aroma, from the re-action, and new combination which it occasions. M. Curaudau attributes the difference of the heat to which the liquor can be brought in the deep and in the shallow stills, to the greater evaporation of the latter which always keeps pace with the heat produced, or in other words, encreasing the fire under it only accelerates the evaporation without adding to the heat of the liquor. From his experiments and observations, M. Curaudau concludes.

1. That shallow alembics, though fit for the distillation of certain fermented liquors may sometimes alter the products of distillation.

2, That the inconveniences of employing shallow vessels in distilling wines, arise from the facility, with which evaporation takes place in them.

3, That a high temperature is always necessary to carry over the peculiar aroma of the wine, and perhaps too that arising from the action of heat in the principles of the wine.

4, That deep alembics ought to be preferred to shallow ones for the distillation of wine.

5, Lastly that the best dimensions of an alembic (for wine) with regard to figure, must be such, that the surface of the liquor heated shall be constantly greater than that from which the evaporation takes place, and we may for instance take it as a rule that the proportion between the two should be as four to one.

Remarks....The translator of the above paper for Nicholson's journal, observes that "though deep stills are best for distilling those simple or spirituous waters, where a full impregnation with the peculiar flavour of the vegetable substance employed is desirable; yet that from the above paper it is evident that a shallow still is preferable where the object is to prevent as much as possible the peculiar flavour of the liquor distilled from rising, as in distilling from malt and from molosses, the common materials in our country, and this not only on account of the saving in time and fuel, but of the superiority in point of flavour. The proper proportions for the deep stills for the finer kinds of the first mentioned articles, may deserve a more particular inquiry."

Mr. Curaudau has not been very happy in accounting for the greater heat, which the liquor in deep stills, is capable of acquiring, as by way of a cause he has merely stated an effect; the real cause is the greater pressure, which the increased depth of the liquor occasioned, affording more resistance to the motion of the heat, or hot steam, in its passage from the bottom of the alembic to the surface.

Account of a New Musical Instrument, called a Clavo-cylinder, invented by M. Chladni.

M. Chladni describes his invention in the following terms;

"The Clavi-cylinder contains a set of keys, and behind them a glass cylinder, seven centimeters (about three inches) in diameter, which is turned by means of a pedal, and loaded wheel. This cylinder is not the sounding body, but it produces the sound by friction on the interior mechanism. The sounds may be prolonged at pleasure, with all the gradations of *crescendo*, and *diminuendo*, in proportion as the pressure on the keys is increased or diminished. This instrument is never out of tune. It contains four octaves and an half, from *ut*, the lowest in the harpsichord, up to *fa*."

The imperial conservatory of music at Paris, have made a very favourable report of M. Chladni's invention, which report describes it as resembling the flute and clarionet in the high notes, and the bassoon in the low notes; but also states that it is not so well adapted for lively strains, as for solemn music. They however, highly praise its effects in the *crescendo* and *diminuendo*.

Remarks....Our late ingenious countryman, Mr. Clagget of Waterford, contrived and made several duplicates of an instrument, which possessed most of the properties of M. Chladni's Clavi-cylinder. It was called an *Aiauton*, and it consisted of tuning forks of various sizes, suitable to the different notes, over which a rozined silk band was moved by a crank and pedal, and was brought into contact with any one desired, by pressing the corresponding key. It seems very probable, from the effects of M. Chladni's instrument, corresponding so exactly with those of this, that the sounding parts are the same in both, and that they only differ in the glass cylinder in the French instrument being substituted for the silk band, of that contrived first by Mr Clagget.

On deal Pendulum Rods, by Mr. E. Walker. *Phil. Mag. v. 34, p. 2.*

Mr. Walker, in the beginning of